Patient Education and Counseling xxx (2015) xxx–xxx

Contents lists available at ScienceDirect

Patient Education and Counseling

journal homepage: www.elsevier.com/locate/pateducou

Health beliefs and desire to improve cholesterol levels among patients with hyperlipidemia

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ARTICLE INFO

Article history:
Received 25 March 2015
Received in revised form 29 September 2015
Accepted 25 November 2015

Keywords:
Hyperlipidemia
United States Department of Veterans Affairs
Health behavior
Disease susceptibility
Medication adherence

ABSTRACT

Objective: Because hyperlipidemia is asymptomatic, many veterans affairs (VA) patients may not perceive it seriously. We assessed key Health Belief model concepts to describe patients' cholesterol-related health beliefs and examine associations between patient-level factors and desire to improve cholesterol control.

Methods: We used baseline data from an ongoing randomized clinical trial. Eligible patients were receiving care at the Durham VA and had CVD risk-total cholesterol levels >130 mg/dL and/or <80% medication adherence in the previous 12 months. A survey assessed patients' health beliefs about high cholesterol and self-reported medication adherence. Multivariable logistic regression examined whether there was an association between desire to control cholesterol and cholesterol status.

Results: Approximately 64% ($n = 155$) of patients perceived high cholesterol as 'very serious'. In multivariable logistic regression analysis, patients who perceived high cholesterol as 'very serious' (OR 2.26, $p = 0.032$) and/or with high self-efficacy (OR 4.70, $p < 0.001$) had increased odds of desiring cholesterol control.

Conclusion: The factors most significantly associated with desire to improve cholesterol control were perceiving hyperlipidemia as 'very serious and self-efficacy for cholesterol control.

Practice implication: Educating patients, with the goal of appropriately increasing their perceived risk of disease, is likely necessary to impact cholesterol control.

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1. Introduction

Elevated total cholesterol, or hyperlipidemia, is a modifiable risk factor for cardiovascular disease (CVD); CVD is a leading cause of death in the U.S. [1]. The American Heart Association purports that proper CVD risk reduction includes the management of high cholesterol through the modification of lifestyle factors, such as improving diet and exercise habits, as well as through the use of prescription medications including statins [2]. Although improvements in LDL-C have been associated with reduction in risk for major cardiovascular events [3], many veterans fail to take medications according to prescription instructions [4]. One possible cause is skepticism in the potential consequences of hyperlipidemia and related a lack knowledge regarding the impact of reducing cholesterol levels.

Potential reasons for not engaging in healthy behaviors and adhering to prescription medications are numerous. These factors include having low health literacy, being of lower socioeconomic status, and experiencing barriers such as forgetfulness [5–9]. While these are real and often tangible barriers, underlying these factors – and the ability to overcome them – are health beliefs. Health beliefs influence many avenues of health and well-being. Since hyperlipidemia is an asymptomatic disease, many patients may not perceive it to be serious, and subsequently may not have the desire or confidence to improve their total cholesterol levels. Understanding characteristics associated with a desire to improve cholesterol control may be an important first step in changing health beliefs associated with cholesterol management.

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http://dx.doi.org/10.1016/j.pec.2015.11.025
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Please cite this article in press as: L.L. Zullig, et al., Health beliefs and desire to improve cholesterol levels among patients with hyperlipidemia, Patient Educ Couns (2015), http://dx.doi.org/10.1016/j.pec.2015.11.025

The Health Belief Model (HBM) is a prominent conceptual framework with broad applications for understanding health behaviors [10,11]. Underscoring HBM is the idea that patients will engage in positive health actions in a desire to avoid negative health consequences. The HBM has six key concepts. In the context of elevated hyperlipidemia, these concepts include: (1) perceived susceptibility—belief of the chances of developing complications of high cholesterol; (2) perceived severity—belief of seriousness of high cholesterol and its consequences; (3) perceived benefits—belief in the efficacy of taking medications and making lifestyle changes to reduce the risk or impact of having high cholesterol; (4) perceived barriers—belief in the costs, pill burden, and other obstacles of managing high cholesterol; (5) cues to action—strategies to indicate readiness to change; and (6) self-efficacy—confidence in the ability to take action to improve cholesterol levels [10,11]. This analysis addresses 4 of these 6 principles (i.e., perceived susceptibility, perceived severity, perceived barriers, self-efficacy).

Using baseline data from an ongoing randomized controlled trial, we assessed key concepts from the HBM to address two objectives. First, we sought to describe patients' cholesterol-related health beliefs. Second, we aimed to examine the association between patients' sociodemographic characteristics, health beliefs, and their desire to improve their cholesterol control. Understanding what motivates patients' desires to improve cholesterol control may be an important foundation for future educational and interventional efforts.

2. Methods

We used baseline data from an ongoing randomized clinical trial conducted at the Durham, North Carolina Veterans Affairs (VA) Medical Center. The trial design has been previously described in detail [12]. In brief, the trial is a two-arm trial with block randomization to ensure a rolling balance between the two arms (intervention vs. usual care). The objective of the trial is to evaluate the effect of a special child-resistant blister packaging that includes a reminder feature of daily labeled blisters and instructions for use (MeadWestvaco Corporations' pre-filled Dosepak® Express with Optilock technology); the primary outcome of the overarching trial is medication adherence with prescribed statin drugs (Fig. 1). Eligible patients were receiving care at the Durham VA and were at risk for CVD; they had LDL-C levels greater than 130 mg/dL and/or they had less than 80% adherence to their statin medication in the previous 12 months. To determine medication adherence, the medication possession ratio (MPR) was calculated from electronic health record data. The sample for this analysis includes all patients enrolled in the trial that completed a baseline assessment ($n = 242$).

A survey assessing patients' health beliefs about high cholesterol and self-reported medication adherence, among other factors, was administered at the time of trial enrollment. We used this baseline data to evaluate the association between sociodemographic characteristics, health beliefs, and desire to improve cholesterol control.

Patients could endorse up to 7 barriers for taking medications as prescribed, a key factor in cholesterol control, including issues such as, "I delay taking medications at an inconvenient time." Responses ranged from 'definitely true' to 'definitely false.' For the purpose of descriptive analysis, 'definitely' and 'probably' true/false were collapsed into one category (e.g., 'definitely or probably true').

The primary outcome measure was patient-reported desire to improve cholesterol control. During the baseline in-person interview, patients were asked, "On a scale of 1–10, where 1 = definitely would not like to and 10 = definitely would like to, how much do you want to improve your cholesterol control?" The outcome measure was collapsed and dichotomized such that respondents with a value of 10 were classified as "Definitely would", while all other non-missing values (1 through 9) were classified as "May or may not".

Total cholesterol values were obtained from the laboratory reports in the electronic medical record. To be eligible for this study, all patients were required to have a total cholesterol level of $\geq$130 mg/dL. For the purpose of this analysis, we defined high cholesterol as a total cholesterol value equal to or above a threshold of 200 mg/dL.

To assess perceived susceptibility for negative health effects related to hyperlipidemia, patients were asked, "If over the next six months you don't change any of your health behaviors related to high cholesterol, what do you think your chance of having a heart attack in the next year?" Responses ranged from 'very likely' to 'not likely.' Responses were collapsed and dichotomized as 'very likely' versus all other non-missing responses.

Fig. 1. MeadWestvaco Corporations' DosePak ® Express with Optilock Technology.

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